Overview of Enzyme Sugar-Ethanol Project Gate 3 Review and Subsequent Changes

The Gate 3 Review of the Enzyme Sugar-Ethanol (ESP) Project in January 2002 had a major impact on the direction of the project. This review led to greater focus on understanding core technology and in part led to subsequent solicitation for biorefinery project proposals. An overview of http://www.eere.energy.gov/biomass/pdfs/reviewers_comments.pdf **comments received** and http://www.eere.energy.gov/biomass/pdfs/reviewers_responses.pdf **responses** to those comments at the January 2002 Stage 3 Gate Review of the Enzyme Sugar-Ethanol Platform (now Sugar Platform Process Integration) Project follow.

The highlight finding of the external panel participating in the review was that this project should focus on developing a better understanding of the core technology development and integration issues rather than selecting and putting together an integrated technology package per se. The reviewers emphasized that once this technology is sufficiently developed, ultimate commercialization will be done by industry, not government. Hence, industry rather than government (national laboratories) should be identifying which specific combinations of feedstock(s), product(s), and processes (i.e., integrated technology packages) appear sufficiently economically compelling to risk the additional costs associated with extended Stage 3 process development and larger-scale Stage 4 demonstration. This feedback has been incorporated into a revised project plan, as described in greater detail in the attached documents.

The Project's Role is Changing

Significant changes have occurred in the strategy of DOE's Office of the Biomass Program since ESP Project's Gate 3 review was held in January 2002 and DOE's Golden Field Office issued a Letter of Interest in February 2002 to outline its proposed path for moving the ESP Project into Stage 4 and ask industry to explain its preferences for how it would prefer to see this done. In particular, DOE issued a major Bioenergy Solicitation in late FY02 requesting proposals with 50% or greater cost-share to develop and demonstrate lignocellulose biorefinery-enabling technologies. Awards were made in response to this solicitation in early FY03. While many details including the schedules remain to be finalized for these DOE- and USDA-funded projects, it is already known that several of them are proposing to develop and demonstrate technologies that incorporate enzymatic cellulose hydrolysis. As a consequence, it is now likely that future efforts to demonstrate and commercialize enzymatic hydrolysis-based conversion technology will occur via these Bioenergy Solicitation projects rather than via the ESP Project as was previously conceived. The implications of these developments on the ESP Project remain unknown, but clearly the role of the ESP Project needs to change (if this project is to continue).

One of the key objectives of the interim project review planned for the 2nd quarter of FY03 is to get feedback from industry stakeholders as to what the role of the ESP project should be in light of these developments. For example, one proposed new role for the ESP Project, which is consistent with the high-level reviewer feedback, is to redirect the project's efforts to focus on fundamental process development and integration rather than on more applied process demonstration. If redirected in this fashion, the project might be able to broadly support related Bioenergy Solicitation award efforts. For instance, ESP Project researchers could develop and apply new tools and techniques that enable improved mechanistic understandings or other as-yet-to-be-identified insights about enzymatic-hydrolysis-based

processes to be established. Similarly, fundamental process integration studies could be useful to identify key process interactions that govern process performance.